Claims

1) Nucleic acid encoding a 75 kD *Lawsonia intracellularis* protein or a part of said nucleic acid that encodes an immunogenic fragment of said protein, said nucleic acid or said part thereof having at least 90 %, preferably 92 %, more preferably 94 %, even more preferably 96% homology with a nucleic acid having a sequence as depicted in SEQ ID NO: 1
2) Nucleic acid encoding a 27 kD *Lawsonia intracellularis* protein or a part of said nucleic acid that encodes an immunogenic fragment of said protein, said nucleic acid or said part thereof having at least 90 %, preferably 92 %, more preferably 94 %, even more preferably 96% homology with a nucleic acid having a sequence as depicted in SEQ ID NO: 3
3) Nucleic acid encoding a 62 kD *Lawsonia intracellularis* protein or a part of said nucleic acid that encodes an immunogenic fragment of said protein, said nucleic acid or said part thereof having at least 90 %, preferably 92 %, more preferably 94 %, even more preferably 96% homology with a nucleic acid having a sequence as depicted in SEQ ID NO: 5
4) Nucleic acid encoding a 57 kD *Lawsonia intracellularis* protein or a part of said nucleic acid that encodes an immunogenic fragment of said protein, said nucleic acid or said part thereof having at least 90 %, preferably 92 %, more preferably 94 %, even more preferably 96% homology with a nucleic acid having a sequence as depicted in SEQ ID NO: 7
5) Nucleic acid encoding a 74 kD *Lawsonia intracellularis* protein or a part of said nucleic acid that encodes an immunogenic fragment of said protein, said nucleic acid or said part thereof having at least 90 %, preferably 92 %, more preferably 94 %, even more preferably 96% homology with a nucleic acid having a sequence as depicted in SEQ ID NO: 9
6) Nucleic acid encoding a 44 kD *Lawsonia intracellularis* protein or a part of said nucleic acid that encodes an immunogenic fragment of said protein, said nucleic acid or said part thereof having at least 90 %, preferably 92 %, more preferably 94

%, even more preferably 96% homology with a nucleic acid having a sequence as depicted in SEQ ID NO: 11

7) Nucleic acid encoding a 43 kD *Lawsonia intracellularis* protein or a part of said nucleic acid that encodes an immunogenic fragment of said protein, said nucleic acid or said part thereof having at least 90 %, preferably 92 %, more preferably 94 %, even more preferably 96% homology with a nucleic acid having a sequence as depicted in SEQ ID NO: 13

8) Nucleic acid encoding a 26/31 kD *Lawsonia intracellularis* protein or a part of said nucleic acid that encodes an immunogenic fragment of said protein, said nucleic acid or said part thereof having at least 90 %, preferably 92 %, more preferably 94 %, even more preferably 96% homology with a nucleic acid having a sequence as depicted in SEQ ID NO: 15

9) Nucleic acid encoding a 101 kD *Lawsonia intracellularis* protein or a part of said nucleic acid that encodes an immunogenic fragment of said protein, said nucleic acid or said part thereof having at least 90 %, preferably 92 %, more preferably 94 %, even more preferably 96% homology with a nucleic acid having a sequence as depicted in SEQ ID NO: 17

10) DNA fragment comprising a nucleic acid according to claims 1-9.

11) Recombinant DNA molecule comprising a nucleic acid according to claims 1-9 or a DNA fragment according to claim 10, under the control of a functionally linked promoter.

12) Live recombinant carrier comprising a nucleic acid according to claims 1-9, a DNA fragment according to claim 10 or a recombinant DNA molecule according to claim 11.

13) Host cell comprising a nucleic acid according to claims 1-9, a DNA fragment according to claim 10, a recombinant DNA molecule according to claim 11 or a live recombinant carrier according to claim 12.

14) A 75 kD *Lawsonia intracellularis* protein, said protein comprising an amino acid sequence that is at least 90 %, preferably 92 %, more preferably 94 %, even more preferably 96 % homologous to the amino acid sequence as depicted in SEQ ID NO: 2, or an immunogenic fragment of said protein.

15) A 27 kD *Lawsonia intracellularis* protein, said protein comprising an amino acid sequence that is at least 90 %, preferably 92 %, more preferably 94 %, even more preferably 96 % homologous to the amino acid sequence as depicted in SEQ ID NO: 4, or an immunogenic fragment of said protein.

16) A 62 kD *Lawsonia intracellularis* protein, said protein comprising an amino acid sequence that is at least 90 %, preferably 92 %, more preferably 94 %, even more preferably 96 % homologous to the amino acid sequence as depicted in SEQ ID NO: 6, or an immunogenic fragment of said protein.

17) A 57 kD *Lawsonia intracellularis* protein, said protein comprising an amino acid sequence that is at least 90 %, preferably 92 %, more preferably 94 %, even more preferably 96 % homologous to the amino acid sequence as depicted in SEQ ID NO: 8, or an immunogenic fragment of said protein.

18) A 74 kD *Lawsonia intracellularis* protein, said protein comprising an amino acid sequence that is at least 90 %, preferably 92 %, more preferably 94 %, even more preferably 96 % homologous to the amino acid sequence as depicted in SEQ ID NO: 10, or an immunogenic fragment of said protein.

19) A 44 kD *Lawsonia intracellularis* protein, said protein comprising an amino acid sequence that is at least 90 %, preferably 92 %, more preferably 94 %, even more preferably 96 % homologous to the amino acid sequence as depicted in SEQ ID NO: 12, or an immunogenic fragment of said protein.

20) A 43 kD *Lawsonia intracellularis* protein, said protein comprising an amino acid sequence that is at least 90 %, preferably 92 %, more preferably 94 %, even more preferably 96 % homologous to the amino acid sequence as depicted in SEQ ID NO: 14, or an immunogenic fragment of said protein.

21) A 26/31 kD *Lawsonia intracellularis* protein, said protein comprising an amino acid sequence that is at least 90 %, preferably 92 %, more preferably 94 %, even more preferably 96 % homologous to the amino acid sequence as depicted in SEQ ID NO: 16, or an immunogenic fragment of said protein.

22) A 101 kD *Lawsonia intracellularis* protein, said protein comprising an amino acid sequence that is at least 90 %, preferably 92 %, more preferably 94 %, even more

preferably 96 % homologous to the amino acid sequence as depicted in SEQ ID NO: 18, or an immunogenic fragment of said protein.

23) *Lawsonia intracellularis* protein according to claim 14-22 for use in a vaccine.

24) Use of a *Lawsonia intracellularis* protein according to claim 14-22 for the manufacturing of a vaccine for combating *Lawsonia intracellularis* infections.

25) Vaccine for combating *Lawsonia intracellularis* infections, characterised in that it comprises a nucleic acid according to claims 1-9, a DNA fragment according to claim 10, a recombinant DNA molecule according to claim 11, a live recombinant carrier according to claim 12, a host cell according to claim 13 or a protein according to claims 14-22, and a pharmaceutically acceptable carrier.

26) Vaccine according to claim 25, characterised in that it comprises an adjuvant.

27) Vaccine according to claim 25 or 26, characterised in that it comprises an additional antigen derived from a virus or micro-organism pathogenic to pigs or genetic information encoding said antigen.

28) Vaccine according to claim 27, characterised in that said virus or micro-organism pathogenic to pigs is selected from the group of Pseudorabies virus, Porcine influenza virus, Porcine parvo virus, Transmissible gastro-enteritis virus, Rotavirus, *Escherichia coli, Erysipelothrix rhusiopathiae, Bordetella bronchiseptica, Salmonella cholerasuis, Haemophilus parasuis, Pasteurella multocida, Streptococcus suis, Mycoplasma hyopneumoniae, Brachyspira hyodysenteriae* and *Actinobacillus pleuropneumoniae*.

29) Vaccine for combating *Lawsonia intracellularis* infections, characterised in that it comprises antibodies against a protein according to claims 14-22.

30) Method for the preparation of a vaccine according to claims 25-29, said method comprising the admixing of a nucleic acid according to claim 1-9, a DNA fragment according to claim 10, a recombinant DNA molecule according to claim 11, a live recombinant carrier according to claim 12, a host cell according to claim 13, a protein according to claim 14-22, or antibodies against a protein according to claim 14-22, and a pharmaceutically acceptable carrier.

31) Diagnostic test for the detection of antibodies against *Lawsonia intracellularis*, characterised in that said test comprises a protein or a fragment thereof as defined in claim 14-22.

32) Diagnostic test for the detection of antigenic material of *Lawsonia intracellularis*, characterised in that said test comprises antibodies against a protein or a fragment thereof as defined in claim 14-22.